It's all about them

Using student-centered data and student data projects to motivate learning of Statistics

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Abstract: Teaching and learning statistics can be greatly improved by using real data. There are many sources of real data, but whether your students will consider it real is another matter. One approach is to encourage students to use data from their every day lives. These data can be used to collect an on-the-cuff data set for an in-class demonstration, or can be part of a longer "project" assignment. Participants will learn by doing, which means they will collect data about themselves and engage (on a time compressed scale) in the same sorts of discussions we would hope their students will engage in. An important component will be to discuss ways of making the data collection non-embarrasing and non-threatening.

At the 2004 *Beyond the Formula*, Bryce, Hoerl, and Snee issued a challenge to provide students with datasets that are not just interesting, but also useful. And useful to the students themselves. In this spirit, I issue the same challenge to the breakout session to discuss and develop ways in which we can bring statistics directly into students lives.

As an example of one such method my colleague Mahtash Esfandiari worked out, we'll talk about using "self help" questionnaires in class. These questionnaires serve as the sugar that helps the statistical medicine go down. While students gain insight into how they handle various aspects of their social and academic life (e.g. conflict resolution), they also learn psychometric theory (the theory of test development) and data analysis. These quizzes (lets call them by the more formal "self-assessment instruments") provide rich ground for discussing a variety of topics covered in introductory and advanced statistics courses.

To illustrate, we'll evaluate ourselves on one such assessment item, the "USCOTS Teachers Self-Assessment Inventory." This evaluation may or may not lead to greater insight into how you approach the teaching of statistics. But in any event, it will lead us to discussion of some statistical topics, and we'll discuss ways of using the test to teach those topics to students.

Handouts will include the syllabus from Prof. Esfandiari's class that was based solely around a similar such exercise, but focused more on inter-personal relationships. The Conflict Resolution Questionnaire she used will be included.

References

1. Bryce, Hoerl, Snee, "Statistical Thinking Workshop: The Theory Behind a Statistical Thinking Approach", Beyond the Formula VIII, August 2004.
2. Gal, Iddo & Ginsburg, Linda, "The Role of Beliefs and Attitudes in Learning Statistics: Towards an Assessment Framework", Journal of Statistics Education, v.2, n.2 (1994).
3. Gould, Stephen Jay The Mismeasure of Man, WW Norton and Company, New York, 1981.
4. Roberts, Seth, "Surprises from Self-Experimentation: Sleep, Mood, and Weight", Chance Magazine, vol. 14, No.2, 2001.